VERMONT CONSTRUCTION SPECIFICATION

11B – EARTHFILL – SODA ASH TREATMENT

1. Scope

The work shall consist of base preparation, soda ash application, incorporating soda ash into soil and compaction of soil/soda ash liner.

2. Material

The soda ash shall be dense grade sodium carbonate anhydrous.

3. Base Preparation

The surface upon which the liner/cover is to be constructed shall be graded to the specified contours as shown on the drawings. Side slopes shall be no greater than 3 horizontal to 1 vertical unless.

The soil shall be thoroughly tilled and reduced to its native particle size. All roots or vegetation and other biodegradable materials and all boulders and other deleterious materials which would penetrate through the thickness of the liner shall be removed. No debris larger in diameter or length than 10% of the finished thickness of the proposed liner shall remain within the soil that is to be admixed with soda ash to form the liner/cover.

Clean potable water necessary to obtain optimum moisture content as defined by ASTM procedure D698 or D1557 shall be applied to the soil after spreading and mixing the soda ash. Where overly moist soil conditions exist, the soil should be allowed to dry prior to spreading the soda.

4. Soda Ash Application

Side slopes of the structure shall be sealed before the structure floor in the event of precipitation during construction.

The soda ash shall be spread uniformly across the base surface at the specified application rate, using an agricultural lime spreader or other equipment as approved by the NRCS representative. The soda ash may also be applied at the appropriate application rate by distributing 100-pound bags of the material in a marked grid pattern. Each bag shall be broken open and the material spread evenly within each grid square, using tools such as hand rakes.

5. Incorporating Soda Ash into Base

After each area has been covered, the soda ash shall be thoroughly incorporated into the soil to a depth of 6 inches or as otherwise specified on the drawings, to form a homogeneous soil-soda ash mixture. A rotary tiller, soil stabilizer or similar method of mixing is preferred; however, other equipment may be used, subject to the NRCS representative's approval. Any implement employed in this operation should have the capability of adjusting for depth of tillage.

The contractor shall only work on an area that can be completed in one working day. Completion shall be defined as spreading of the specified soda ash, mixing of the soil with the soda ash sealant, soil moisture adjustment and compaction of the mixed soil-soda ash membrane.

6. Compaction

The soil-soda mixture shall be compacted at a moisture content range of between optimum and 2% above optimum or as specified on the drawings. The mixture shall be compacted as necessary to make the density of the matrix not less than 95% of the Standard Proctor Density as determined by ASTM D 698, or as otherwise specified on the drawings. Compaction shall be accomplished by a sheepsfoot roller. Upon completion of liner installation and compaction, in-place density tests shall be performed by a certified testing laboratory. If liner does not meet compaction requirements, additional compaction shall be performed until the specified compaction is achieved.

7. Miscellaneous

Areas adjacent to penetrating structures such as standpipes, intakes or other areas inaccessible to spreading, mixing and compaction equipment demand special care. A mixture of 1 part soda ash to 3 parts soil (by volume) shall be hand applied, mixed and hand compacted along all construction appurtenances.

Unless otherwise specified on the drawings, an additional six inch lift of untreated soil shall be installed on top of the liner. The moisture content must be as specified on the drawings. Compaction of the protective lift can be obtained by a minimum of two passes with the cleats of a dozer.

Laborers should wear inhalation protective devices. The soda ash powder is very fine and can cause some breathing difficulties.